



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G06F 1/00</b>	<b>A1</b>	(11) International Publication Number: <b>WO 98/37481</b>
		(43) International Publication Date: 27 August 1998 (27.08.98)

(21) International Application Number: PCT/US98/03623

(22) International Filing Date: 25 February 1998 (25.02.98)

(30) Priority Data:  
08/805,804 25 February 1997 (25.02.97) US(71) Applicant: INTERTRUST TECHNOLOGIES CORP.  
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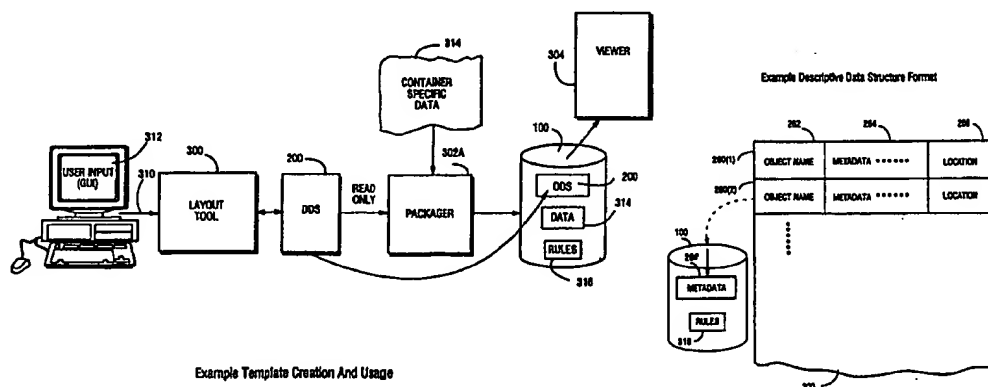
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(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

**Published***With international search report.**Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

(54) Title: TECHNIQUES FOR DEFINING, USING AND MANIPULATING RIGHTS MANAGEMENT DATA STRUCTURES



## (57) Abstract

A descriptive data structure provides an abstract representation of a rights management data structure such as a secure container. The abstract representation may describe, for example, the layout of the rights management data structure. It can also provide metadata describing or defining other characteristics of rights management data structure use and/or processing. For example, the descriptive data structure can provide integrity constraints that provide a way to state rules about associated information. The abstract representation can be used to create rights management data structures that are interoperable and compatible with one another. This arrangement preserves flexibility and ease of use without compromising security.



US005920861A

# United States Patent [19]

Hall et al.

[11] Patent Number: 5,920,861  
[45] Date of Patent: Jul. 6, 1999

Please see the text and figures of this US Patent, it is the equivalent.

[54] TECHNIQUES FOR DEFINING USING AND MANIPULATING RIGHTS MANAGEMENT DATA STRUCTURES

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[21] Appl. No.: 08/805,804

[22] Filed: Feb. 25, 1997

[51] Int. Cl.<sup>6</sup> ..... G06F 17/30

[52] U.S. Cl. .... 707/9; 707/4; 707/102; 707/103

[58] Field of Search ..... 707/9, 4, 102, 707/103

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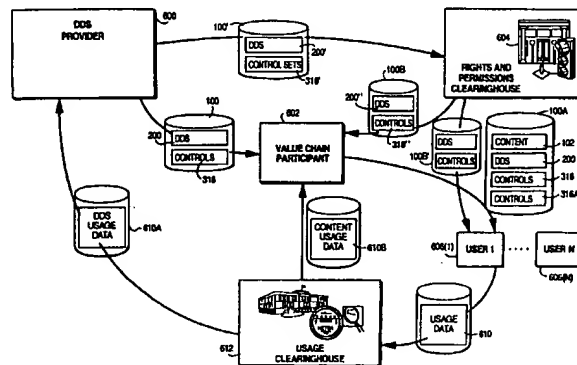
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[57]

## ABSTRACT

A descriptive data structure provides an abstract representation of a rights management data structure such as a secure container. The abstract representation may describe, for example, the layout of the rights management data structure. It can also provide metadata describing or defining other characteristics of rights management data structure use and/or processing. For example, the descriptive data structure can provide integrity constraints that provide a way to state rules about associated information. The abstract representation can be used to create rights management data structures that are interoperable and compatible with one another. This arrangement preserves flexibility and ease of use without compromising security.

101 Claims, 14 Drawing Sheets



**We Claim:**

1. A data processing method comprising:  
creating a machine readable, abstract descriptive data structure;  
and  
5 using the representation to interoperate with at least one rights  
management data structure.
2. A method as in claim 1 wherein the using step includes the  
step of formatting at least one part of at least one rights management  
data structure at least in part in accordance with the descriptive data  
10 structure.
3. A method as in claim 1 wherein the using step includes the  
step of formatting display of at least one part of at least one rights  
management data structure at least in part in accordance with the  
descriptive data structure.
- 15 4. A method as in claim 1 wherein the using step includes the  
step of formatting reading of at least one part of at least one rights  
management data structure at least in part in accordance with the  
descriptive data structure.
- 20 5. A method as in claim 1 wherein the using step includes the  
step of displaying at least a part of at least one rights management  
data structure based at least in part on the descriptive data structure.
6. A method as in claim 1 wherein the creating step includes  
the step of providing metadata within the descriptive data structure,

and the displaying step comprises displaying at least some information from the rights management data structure at least in part in accordance with the metadata.

7. A method as in claim 1 wherein the using step includes the  
5 step of dynamically generating a user interface based at least in part on the descriptive data structure.

8. A method as in claim 1 wherein the using step includes the step of automatically identifying and/or locating at least one data field at least in part based on the descriptive data structure.

10 9. A method as in claim 1 wherein the using step includes the step of automatically extracting data within the rights management data structure based at least in part on the descriptive data structure.

10. A method as in claim 1 wherein the creating step comprises creating a descriptive data structure that is independent of  
15 any particular rights management data structure but abstractly describes a class of rights management data structures.

11. A method as in claim 1 wherein the creating step includes the step of creating metadata for defining at least one characteristic of the using step.

20 12. A method as in claim 1 wherein the creating step includes the step of creating the abstract representation at least in part by using a wizard, the operation of the wizard being defined at least in part by a further descriptive data structure.

13. A method as in claim 1 wherein the using step includes the step of altering the behavior of a polymorphous process at least in part based on the descriptive data structure.

14. A method as in claim 1 wherein the using step includes the  
5 step of interpreting at least part of the descriptive data structure at run time.

15. A method as in claim 1 wherein the using step includes the step of dynamically adapting at least part of data processing of the rights management data structure at run time.

10 16. A method as in claim 1 wherein the using step includes using at least part of the descriptive data structure as instructions for driving and automated digital content handler.

17. A method as in claim 1 wherein the creating step includes the step of creating at least one integrity constraint, and the using step  
15 includes the step of enforcing the integrity constraint.

18. In a rights management data processing architecture of the type including a secure electronic appliance that interacts with an application through an interface, a method of interoperating with secure electronic containers comprising the following steps:

20 (a) delivering an abstract data structure representation to the application;

(b) generating container access requests with the application based at least in part on the abstract data structure representation; and

(c) accessing the container with the secure electronic appliance at least in part based on the container access requests the container generates.

19. A method as in claim 18 further including the steps of:

5 (d) providing, with the secure electronic appliance, information from the container to the application; and

(e) processing the provided information at least in part in accordance with the abstract data structure representation.

20. A method as in claim 19 wherein the processing step (e) includes the step of processing the provided information in accordance with metadata provided within the abstract data structure representation.

21. A method of creating and using a secure container comprising:

15 (a) defining a descriptive data structure that generically defines a class of interoperable, compatible container structures;

(b) using the descriptive data structure to create at least one secure container;

(c) distributing the descriptive data structure to plural electronic appliances; and

20 (d) interoperating with the secure container at said plural electronic appliances by at least in part using the descriptive data structure to locate and/or specify information within the secure container.

22. A method as in claim 21 wherein the descriptive data structure corresponds to an atomic transaction, and the method further includes the step of performing the atomic transaction at least one of said plural electronic appliances at least in part in accordance with the  
5 descriptive data structure.

23. A method as in claim 21 further including the step of independently using and/or providing controls relating to the descriptive data structure.

24. A method as in claim 21 further including the step of  
10 defining at least one class of descriptive data structure based on at least one parameter.

25. A descriptive data structure comprising:  
first data that at least in part establishes an association between the descriptive data structure with at least one rights management data  
15 structure;

second data that locates at least some information within the associated rights management data structure; and

metadata that at least in part describes at least one characteristic of use and/or access of the rights management data structure.

20 26. A descriptive data structure as in claim 25 wherein the metadata includes at least one integrity constraint.

27. A method of achieving a degree of compatibility with at least one secure environment comprising:

- (a) creating a descriptive data structure;
  - (b) associating the descriptive data structure with at least one object; and
  - (c) presenting the object and associated descriptive data
- 5 structure to the secure environment; and
- (d) interoperating with the presented object at least in part based on the descriptive data structure.

28. A method as in claim 27 wherein step (d) includes the step of selectively interoperating with the presented object based on the

10 degree to which the secure environment can trust the source of the object and/or the descriptive data structure.